

WHAT IS CLAIMED IS:

- 1 1. A method for building a list of parameters to include with a command,
2 comprising:
3 receiving a plurality of input parameters;
4 determining whether a number of the input parameters exceeds a threshold
5 number of parameters that are capable of being included in the command;
6 merging content of multiple input parameters into at least one output
7 parameter if the number of input parameters exceeds the threshold number, wherein
8 the content of the input parameters is included in a number of output parameters that
9 does not exceed the threshold; and
10 including the output parameters with the command.
- 1 2. The method of claim 1, wherein each input parameter comprises at
2 least one extent that defines a range of tracks between a beginning track and end
3 track, wherein the beginning track of a given extent follows the tracks in all previous
4 extents, and wherein each output parameter includes at least one input extent and
5 wherein at least one output parameter includes the tracks from multiple input extents
6 if the number of input extents exceeds the threshold number.
- 1 3. The method of claim 2, wherein there are n input extents, the threshold
2 number of extents is m , and n is greater than m , further comprising:
3 placing each of a plurality of $(m - k)$ input extents into $(m - k)$ separate output
4 extents, wherein k is an integer less than n minus m ; and
5 arranging the remaining $(m - k + 1)$ to n input extents into at least one
6 of k output extents.
- 1 4. The method of claim 3, further comprising determining whether
2 control data is stored in tracks before the $(m - k + 1)$ input extent, wherein arranging
3 the remaining $(m - k + 1)$ to n input extents into at least one of k output extents

4 comprises arranging the remaining input extents into one output extent if the control
5 data is stored in tracks before the $(m - k + 1)$ input extent.

1 5. The method of claim 3, further comprising:
2 determining whether control data is stored in tracks between the $(m - k + 1)$
3 and n input extents;
4 arranging the extents from the $(m - k + 1)$ input extent to the input extent
5 immediately preceding the track storing the control data into a first output extent if
6 the control data is stored in tracks between the $(m - k + 1)$ and n input extents; and
7 arranging the extents from the input extent following the control data to the n
8 input extent into a second output extent if the control data is stored in tracks between
9 the $(m - k + 1)$ and n input extents.

1 6. The method of claim 2, wherein merging multiple input tracks into one
2 output extent further comprises defining the output extent as having a beginning track
3 equal to the beginning track of a first of the multiple input tracks to merge and an
4 ending track equal to the ending track of the a last of the multiple input tracks to
5 merge.

1 7. The method of claim 2, further comprising:
2 determining whether control data is stored in tracks between the tracks of the
3 input extents; and
4 arranging the tracks in the input extents into the output extents in a manner
5 that avoids including any control data tracks in the tracks defined in the output
6 extents.

1 8. The method of claim 2, wherein the command is a copy command to
2 copy the track ranges defined in the output extents included as parameters to target

3 tracks, wherein the target tracks are capable of storing a duplicate copy of the data in
4 the track ranges defined in the output extents.

1 9. The method of claim 8, wherein the copy command is a point-in-time
2 copy command that indicates in data structures that the tracks in the output extents
3 included as parameters are subject to a point-in-time copy relationship.

1 10. The method of claim 9, wherein the data in the tracks in one output
2 extent subject to the point-in-time copy relationship are only copied to the target
3 tracks if the data in one track in the output extents is modified.

1 11. A system for building a list of parameters to include with a command,
2 comprising:
3 a processor;
4 means for receiving a plurality of input parameters;
5 means for determining whether a number of the input parameters exceeds a
6 threshold number of parameters that are capable of being included in the command;
7 and
8 means for merging content of multiple input parameters into at least one
9 output parameter if the number of input parameters exceeds the threshold number,
10 wherein the content of the input parameters is included in a number of output
11 parameters that does not exceed the threshold; and
12 means for including the output parameters with the command.

1 12. The system of claim 1, further comprising a storage device wherein
2 each input parameter comprises at least one extent that defines a range of tracks in the
3 storage device between a beginning track and end track on the storage device, wherein
4 the beginning track of a given extent follows the tracks in all previous extents, and
5 wherein each output parameter includes at least one input extent and wherein at least

6 one output parameter includes the tracks from multiple input extents if the number of
7 input extents exceeds the threshold number.

1 13. The system of claim 12, wherein the processor comprises a first
2 processor, further comprising:

3 a second processor in communication with the first processor and having
4 access to the storage device;

5 means, implemented in the first processor to communicate the command
6 including the output extent to the second processor; and

7 means, implemented in the second processor, for performing an operation
8 defined by the command with respect to the output extents.

1 14. The system of claim 12, wherein there are n input extents, the
2 threshold number of extents is m , and n is greater than m , further comprising:

3 means for placing each of a plurality of $(m - k)$ input extents into $(m - k)$
4 separate output extents, wherein k is an integer less than n minus m ; and

5 means for arranging the remaining $(m - k + 1)$ to n input extents into at least
6 one of k output extents.

1 15. The system of claim 14, further comprising means for determining
2 whether control data is stored in tracks before the $(m - k + 1)$ input extent, wherein
3 arranging the remaining $(m - k + 1)$ to n input extents into at least one of k output
4 extents comprises arranging the remaining input extents into one output extent if the
5 control data is stored in tracks before the $(m - k + 1)$ input extent.

1 16. The system of claim 14, further comprising:

2 means for determining whether control data is stored in tracks between the
3 $(m - k + 1)$ and n input extents;

4 means for arranging the extents from the $(m - k + 1)$ input extent to the input
5 extent immediately preceding the track storing the control data into a first output
6 extent if the control data is stored in tracks between the $(m - k + 1)$ and n input
7 extents; and
8 means for arranging the extents from the input extent following the control
9 data to the n input extent into a second output extent if the control data is stored in
10 tracks between the $(m - k + 1)$ and n input extents.

1 17. The system of claim 12, wherein merging multiple input tracks into
2 one output extent further comprises means for defining the output extent as having a
3 beginning track equal to the beginning track of a first of the multiple input tracks to
4 merge and an ending track equal to the ending track of the a last of the multiple input
5 tracks to merge.

1 18. The system of claim 12, further comprising:
2 means for determining whether control data is stored in tracks between the
3 tracks of the input extents; and
4 means for arranging the tracks in the input extents into the output extents in a
5 manner that avoids including any control data tracks in the tracks defined in the
6 output extents.

1 19. The system of claim 12, wherein the command is a copy command to
2 copy the track ranges defined in the output extents included as parameters to target
3 tracks, wherein the target tracks are capable of storing a duplicate copy of the data in
4 the track ranges defined in the output extents.

1 20. The system of claim 8, wherein the copy command is a point-in-time
2 copy command that indicates in data structures that the tracks in the output extents
3 included as parameters are subject to a point-in-time copy relationship.

24. The article of manufacture of claim 23, wherein each input parameter comprises at least one extent that defines a range of tracks between a beginning track and end track, wherein the beginning track of a given extent follows the tracks in all

4 previous extents, and wherein each output parameter includes at least one input extent
5 and wherein at least one output parameter includes the tracks from multiple input
6 extents if the number of input extents exceeds the threshold number.

1 25. The article of manufacture of claim 24, wherein there are n input
2 extents, the threshold number of extents is m , and n is greater than m , further
3 comprising:
4 placing each of a plurality of $(m - k)$ input extents into $(m - k)$ separate output
5 extents, wherein k is an integer less than n minus m ; and
6 arranging the remaining $(m - k + 1)$ to n input extents into at least one
7 of k output extents.

1 26. The article of manufacture of claim 25, further comprising determining
2 whether control data is stored in tracks before the $(m - k + 1)$ input extent, wherein
3 arranging the remaining $(m - k + 1)$ to n input extents into at least one of k output
4 extents comprises arranging the remaining input extents into one output extent if the
5 control data is stored in tracks before the $(m - k + 1)$ input extent.

1 27. The article of manufacture of claim 25, further comprising:
2 determining whether control data is stored in tracks between the $(m - k + 1)$
3 and n input extents;
4 arranging the extents from the $(m - k + 1)$ input extent to the input extent
5 immediately preceding the track storing the control data into a first output extent if
6 the control data is stored in tracks between the $(m - k + 1)$ and n input extents; and
7 arranging the extents from the input extent following the control data to the n
8 input extent into a second output extent if the control data is stored in tracks between
9 the $(m - k + 1)$ and n input extents.

32. The article of manufacture of claim 31, wherein the data in the tracks in one output extent subject to the point-in-time copy relationship are only copied to the target tracks if the data in one track in the output extents is modified.